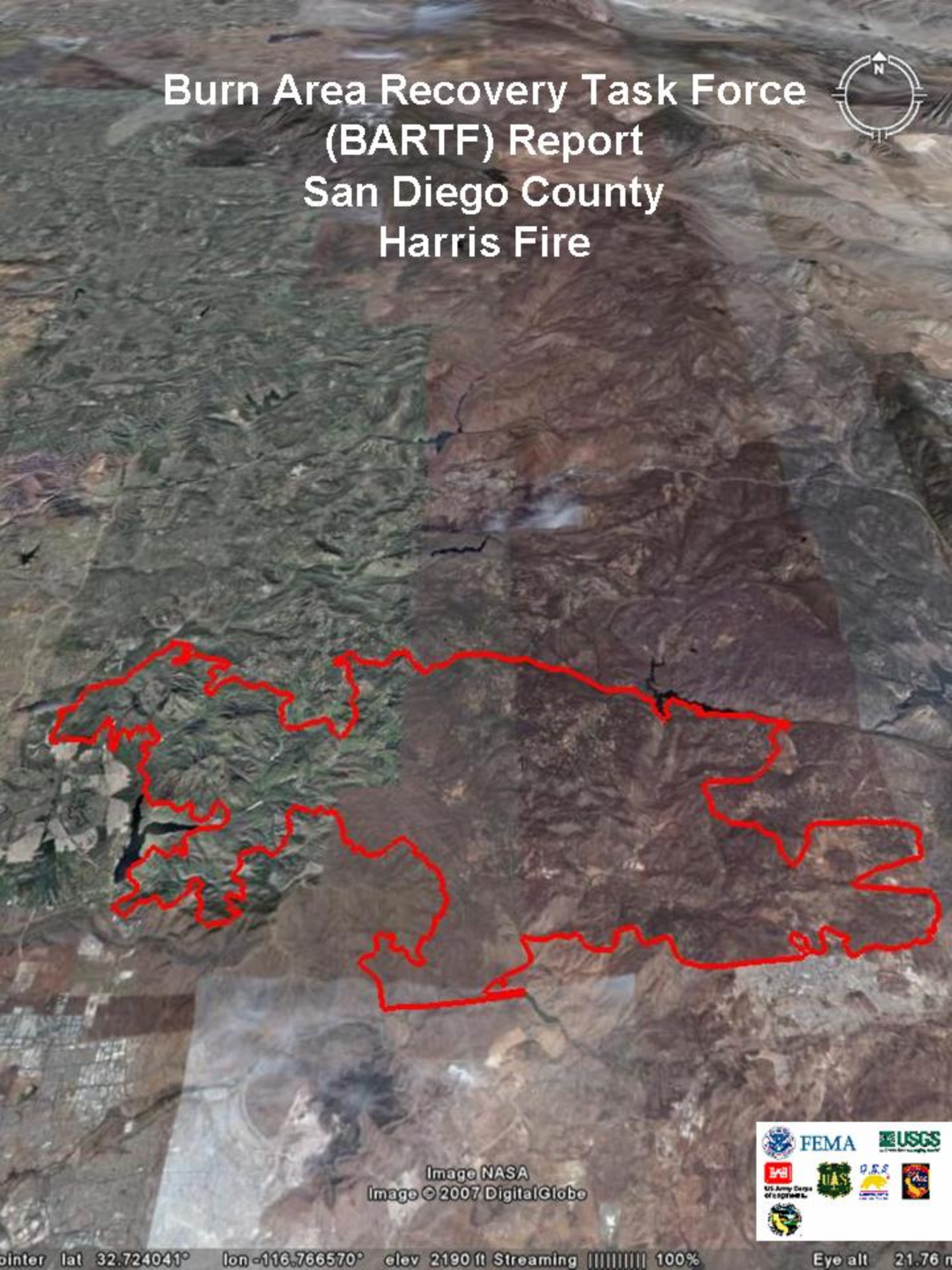
Burn Area Recovery Task Force (BARTF) Report
San Diego County
Harris Fire



Burn Area Recovery Task Force Assessment (BARTF)
San Diego County
Harris Fire

Executive Summary

The Harris Fire burned 90,440 acres in the southwestern section of San Diego County. The information was gathered for this report by state and federal Burned Area Emergency Response (BAER) reports, flood hazard awareness maps, and meetings with various local, state, and federal officials. A list of Appendices is also attached as part of this report. The significant issues identified in this report are as follows:

- There are at least 313 buildings at high risk due to debris flows, sixteen of these buildings lie outside the burn area.
- The debris flows may threaten lives and property across the Mexican border in the cities of Tijuana and Tecate. Mexican emergency authorities need to be informed of this possibility.
- Potential emergency protective measures proposed by the BARTF Team include installation of runoff barriers, emergency warning systems, and debris sedimentation basins.
- Potential funding for emergency protective measures include Federal Emergency Management Agency (FEMA) Public Assistance (PA) Category B, National Resource Conservation Service (NRCS), and the U.S. Army Corps of Engineers. California Office of Emergency Services (OES) - California Disaster Assistance Act (CDAA) funding of projects may be considered for those exigent life-safety related projects that cannot be funded otherwise.
- Several state and federal listed species are located within the risk areas. These species may require consultation with U.S. Fish and Wildlife Service and the Department of Fish and Game (DFG).

Purpose

This BARTF report presents a brief description and assessment of the Harris Fire, one of the numerous Southern California wildfires included in the Presidential Disaster Declaration FEMA-1731-DR. This report is intended to facilitate the effective use of available resources to address threats to public safety, public and private property, and infrastructure that may arise during the 2007 – 2008 winter rainy season due to denuded slopes, and the affiliated potential for flooding and debris flows.

Introduction

The Harris Fire encompassed 90,440 acres in the central southwestern section of San Diego County. A total of 459 buildings and 293 outbuildings were destroyed, and five

persons died. Within the fire perimeter, approximately 4 percent was zero burn severity, 59 percent was low burn severity, 36.5 percent was moderate burn severity, and 0.5 percent was high burn severity.

There are ten Hydrologic Unit Code (HUC-6) sub-watersheds in the fire burn area. These are the Sweetwater Marsh, Sweetwater Reservoir, Otay Reservoir, Jamul Creek, Otay River, Lower Pine Valley, Cottonwood Creek/Lake Moreno, Cottonwood Creek/McAlmond Canyon, Cottonwood Creek/Potrero Creek, and Campo Creek sub-watersheds. Though these are technically sub-watersheds, the term "watershed" is used to describe them.

Names for streams and reservoirs were gathered from the United States Geologic Survey (USGS) topographic maps. Google Earth was used to locate buildings and facilities, and to confirm topographies. The debris flow hazards were calculated and put in Geographic Information System (GIS) map form by FEMA.

The watersheds covered in this report are all included in the approved South San Diego County Multiple Species Conservation Plan (MSCP). The MSCP is a comprehensive conservation plan that covers state and federal endangered species permitting, including the coastal California gnatcatcher, as well as provides protection for several other species of concern (See attached "Biological" Appendix for further details on listed species).

Environmental permits may be required for many of the proposed projects identified in the BARTF Report. Many of these proposed projects can be completed under emergency conditions, or under the waiver process identified in State Executive Order (S-13-07). Projects that do not fall under these classifications would need to follow the regular permit process. See the attached "Environmental Permitting Requirements" and "Biological" Appendix for an explanation of the required permits and the waiver process.

There are a total of 1,135 archeological sites identified within the Harris Fire burn area. There are likely more sites than what is presently known, as vegetation that formerly hid archeological sites is now burned away. Therefore, Potential emergency protective measures should consider the presence of these sites, along with the protected species issues (See "Archeological" Appendix for more information).

There are no Native American tribal lands identified to the BARTF Team within the Harris Fire burn area that are likely to be affected by the projected debris flows.

The identified risks and related post-fire issues have been identified and listed according to watershed boundaries as follows:

Sweetwater Marsh

Background

The Sweetwater Marsh watershed is located within an undeveloped section of the section of the fire perimeter, east of Chula Vista. This section includes the USFWS Wildlife Refuge at Miguel Mountain and Proctor Valley. Because this watershed is primarily conserved as open space, most of the risks are to natural resources, not life and property.

Analysis

- Potential debris flow threatens an area near the community of Sunnyside. This potential damage area is outside of the ten-year flood plain.
- Debris flow may come down Wild Man's Canyon and Proctor Valley.
- Threatened assets include about 19 homes.
- Protected species within this watershed may include the least Bell's vireo, coastal California gnatcatcher, coastal cactus wren, Otay tarplant, and the Quino checkerspot butterfly.

Potential Emergency Protective Measures

- Potential emergency protective measures including installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles should be examined to help reduce the risk of destructive debris flows. This work could be eligible under FEMA/OES PA Category B. Funding from NRCS could also be used to perform this work. Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Notification to wetland-permitting agencies for in-stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Sweetwater Reservoir

Background

The Harris Fire burned only the southern edge of the Sweetwater Reservoir watershed. Sweetwater Reservoir is the primary water supply to the City of Chula Vista and neighboring areas. All buildings affected by the debris flows identified in the Post-Fire Hazard Awareness Maps lie outside the burn area. Land use within the burn perimeter is primarily open space conserved lands owned by Otay Water District and USFWS.

Analysis

- Potential debris flow would threaten part of the unincorporated community of Jamacha Junction. The potential damage area is within the ten year flood plain.
- Potential debris flow would occur down the Sweetwater River floodway.
- Siltation of the Sweetwater Reservoir is also a consequence of the debris flow. The high sediments that collect at the entrance to the lower elevation emergency outlet to the reservoir will need to be dredged or removed because the additional sediment accumulation compromises the function of the emergency outlet release for the reservoir. This could lead to the emergency outlet being rendered inoperable or ineffective, leading to loss of life downstream of the reservoir.
- Assets at risk include a school, a golf course, and two commercial complexes.
- Protected species within this watershed may include the least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, coastal cactus wren, arroyo toad, Hermes copper butterfly, Dunn's mariposa lily, and the Otay tarplant.

Potential Emergency Protective Measures

- Potential emergency protective measures including installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles should be examined to help reduce the risk of destructive debris flows. Silt removal from Sweetwater Reservoir caused by the debris flow would need to be done as well. This work could be eligible under FEMA/OES PA Category A and B. Funding from NRCS could be used to accomplish the Potential emergency protective measures.
- Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Otay Reservoir

Background

The Otay Reservoir watershed is the largest single sub-watershed affected by the Harris Fire. This watershed includes land owned by DFG, tribal lands, and private lands. Significant communities within the Otay watershed include Jamul and Delzura. The watershed drains in to the Upper and Lower Otay Lakes. Lower Otay Lakes is fed by two main tributaries, Dulzura Creek and Jamul Creek. Otay Lakes are one of nine major reservoirs that store and supply water for the City of San Diego.

Analysis

- Buildings that may have been saved within the burn area may now be at high risk from debris flows. All debris flows noted within the watershed occur within the ten year flood plain.
- Thousand Trails campsite, with eight permanent buildings, was not burned by the fire; however, it is at high risk from flooding and debris flows.
- The airplane landing strip near Otay Reservoir on Dulzura Creek is at high risk of being buried by debris flow and flooding. Low lying parts of the unincorporated towns of Dulzura and Engineer Springs may be at moderate to low risk from flooding and debris flows.
- Lower Otay Lake is at a high risk of siltation from the relatively large fire-denuded watershed basin that feeds into it. The high sediments that collect at the entrance to the lower elevation emergency outlet to the reservoir will need to be dredged or removed because the additional sediment accumulation compromises the function of the emergency outlet release for the reservoir. This could lead to the emergency outlet being rendered inoperable or ineffective, leading to loss of life downstream of the reservoir.
- Numerous archaeological sites and protected species are likely to be found within the watershed.
- Protected species within this watershed may include the least Bell's vireo, coastal California gnatchatcher, coastal cactus wren, arroyo toad, Mexican flannelbush, Tecate cypress, Otay tarplant, Dunn's mariposa lily, San Diego ambrosia, Quino checkerspot butterfly, Hermes copper butterfly, Thorne's hairstreak butterfly, and the San Diego fairy shrimp.

Potential Emergency Protective Measures

- Potential emergency protective measures including installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles should be examined to help reduce the risk of destructive debris flows. Silt removal from Otay Reservoir caused by the debris flow would need to be done as well. This work could be eligible under FEMA/OES PA Category A and B. Funding from NRCS could also be used to assist with this.
- Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- San Diego County should consider the installation of sedimentation basins on the Dulzura and Jamul Creeks upstream of Lower Otay Lake to prevent or limit the amount of debris flow into the reservoir itself. Funding for this could come from the U.S. Army Corps of Engineers or from NRCS.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Jamul Creek

Background

The Jamul Creek watershed is located on the northwestern section of the fire perimeter. The watershed drains into the Otay Reservoir watershed via its major water course, Jamul Creek. Slightly less than half of the watershed was burned during the fire. The watershed contains Jamul Creek and an unnamed tributary that potentially could carry debris flows. All debris flows occur within the ten year flood plain.

Analysis

- A total of seven homes within the watershed are identified at risk. Six are at high risk, and the other one may be at moderate risk from debris flow damage. These buildings are outside the burn area.
- Protected species within this watershed may include the coastal California gnatcatcher, Hermes copper butterfly, Mexican flannelbush, and the Dunn's mariposa lily.

Potential Emergency Protective Measures

- Potential emergency protective measures including installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles should be examined to help reduce the risk of destructive debris flows. Silt removal from Otay Reservoir caused by the debris flow would need to be done as well. This work could be eligible under FEMA/OES PA Category A and B. NRCS funding could also be used for the emergency protective measures.
- Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Otay River

Background

The Otay River watershed is located on the western edge of the fire. The Otay River watershed was only marginally affected by the fire, but has some debris flow hazards due to its population and infrastructure elements and due to its being downstream of the Otay Reservoir and Sweetwater Marsh watersheds. A debris flow starting in the Sweetwater Marsh watershed is projected to continue into the northeast corner of the Otay River watershed down the Salt Creek channel. This debris flow includes and spreads outside of the ten year flood plain for Salt Creek.

Analysis

- Eight homes, a school and a golf course should be considered at high risk of being impacted by a debris flow down Salt Creek.
- A large debris flow into the Otay River downstream of Lower Otay Lake is not projected to affect any lives or buildings.
- Protected species within this watershed may include the coastal California gnatcatcher, coastal cactus wren, least Bell's vireo, Quino checkerspot butterfly, Thorne's hairstreak butterfly, Tecate cypress, Otay tarplant, Otay mesa mint, San Diego button-celery, and Dunn's mariposa lily.

Potential Emergency Protective Measures

- Potential emergency protective measures including installation of runoff barriers on Salt Creek should be examined to help reduce the risk of destructive debris flows. This work could be eligible under FEMA/OES PA Category B, or under NRCS.
- Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Lower Pine Valley

Background

The Lower Pine Valley Creek is located within the northern section of the fire perimeter. The watershed has only a marginal section of the burn area, but has a projected debris flow that proceeds out of the burn area down Wilson Creek into Barrett Lake. This watershed is likely to contain numerous archaeological sites and many protected species.

Analysis

- No buildings are in the path of this debris flow. An inlet of Barrett Lake will likely incur heavy siltation if the above referenced debris flow forms.
- Barrett Lake is at a high risk of siltation from the relatively large fire-denuded watershed basin that feeds into it. The high sediments that collect at the entrance to the lower elevation emergency outlet to the reservoir will need to be dredged or removed because the additional sediment accumulation compromises the function of the emergency outlet release for the reservoir. This could lead to the emergency outlet being rendered inoperable or ineffective, leading to loss of life downstream of the reservoir.
- Protected species within this watershed may include the coastal cactus wren, arroyo toad, Gander's ragwort, Dunn's mariposa lily, and Dehesa nolina.

Potential Emergency Protective Measures

- Potential emergency protective measures, including installation of debris flow barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles may be considered by the County to protect the water and fish habitat resource from degradation. Silt removal from Lake Barrett caused by the debris flow would need to be done as well. This work could be eligible under FEMA/OES PA Category B, or under NRCS. Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Cottonwood Creek/Lake Moreno

Background

The Harris Fire burn area only impacted the western edge of this watershed.
Cottonwood Creek is designated as Critical Habitat by the USFWS, and arroyo toads are known to occur within the creek throughout its reaches.

Analysis

- No debris flows are projected within this watershed.

Potential Emergency Protective Measures

- No protective measures seem necessary for protection of life and property in this watershed.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Cottonwood Creek/McAlmond Canyon

Background

The Cottonwood Creek/McAlmond Canyon watershed lies almost entirely within the fire perimeter. Cottonwood Creek, the main water course of the watershed, runs drains into the Cottonwood Creek/Portrero Creek watershed. Cottonwood Creek also includes McAlmond Canyon Creek. Most of the projected debris flows are within the ten year flood map.

Analysis

- Six homes in the burn area should be considered at high risk from a debris flow down either McAlmond Canyon or Cottonwood Creek, as they sit at the junction of these two floodways.
- This watershed is likely to contain numerous archaeological sites and many protected species, including Dehesa nolina. Cottonwood Creek is designated as Critical Habitat by the U.S. Fish and Wildlife Service, and arroyo toads are known to occur within the creek throughout its reaches.

Potential Emergency Protective Measures

- Potential emergency protective measures including installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles on Cottonwood Creek and McAlmond Canyon should be examined to help reduce the risk of destructive debris flows. This work could be eligible under FEMA/OES PA Category B, or under NRCS. Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Cottonwood Creek/Potrero

Background

Approximately two thirds of the Cottonwood Creek/Potrero watershed lies within the burn area. Debris flows identified on the Post-Fire Hazard Awareness Maps flow through Cottonwood Creek/Potero watershed from the Cottonwood Creek/McAlmond Canyon watershed to the north and Potrero Creek from the east. These two major creeks confluence is located at the community of Barrett Junction. From Barrett Junction the creek continue south to join with another debris flow from Bee Canyon Creek. All of this potential debris flow continues south until it crosses into Mexico, where the debris flow projection stops. Most of the debris flow is within the ten year flood plain, and is within the burn area until it reaches Mexico. According to Google Earth, the Cottonwood Creek waterway joins with the Tecate River and passes through agricultural land. Tecate River eventually joins the Tijuana River and passes through the densely populated city of Tijuana, Mexico. The Tijuana River crosses over into California again (Tijuana River Estuary) before emptying into the Pacific Ocean, just south of the City of Imperial Beach. It is unknown how far a debris flow would travel in this watercourse as a result of a ten year frequency storm event.

The town of Barrett Junction is at high risk from Debris flow and flooding as it is located within the flood plain and confluence of two major creeks.

Analysis

- Many of the buildings in the unincorporated towns of Barrett Junction and Potrero have high risks of damage associated with these projected debris flows.
- There are about 105 buildings at high risk along Cottonwood Creek, 156 along Potrero Creek (including two schools), and two buildings along Bee Canyon Creek, for a total of 263. This estimate does not include every outbuilding.
- Protected species within this watershed may also include Tecate cypress, Thorne's hairstreak butterfly, Quino checkerspot butterfly, San Diego fairy shrimp, and Gander's ragwort.
- Potrero and Cottonwood Creeks are designated as Critical Habitat for arroyo toad, by USFWS and arroyo toads are known to occur within both creeks throughout their reaches.
- This watershed is likely to contain numerous archaeological sites and many protected species.

Potential Emergency Protective Measures

- Potential emergency protective measures including the use of emergency warning systems and the installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles on Cottonwood Creek, Potrero Creek, and Bee Canyon Creek should be examined to help reduce the risk of destructive debris flows. This work could be eligible for funding under FEMA/OES PA Category B, or under NRCS. Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Emergency authorities of the Government of Mexico and the City of Tijuana need to be informed of the possible risk to lives and property from potential large debris flows and storm runoff events down the Rio Tecate, caused by storm runoff events within the Harris Fire area.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Campo Creek

Background

The Harris Fire burned the western edge of the Campo Creek watershed. This section of the burn area surrounded the unincorporated California town of Tecate to the north, east, and west.

Analysis

- The predicted debris flow hazard Campo Creek watershed within the burn area seems to be very minor and occur mostly in uninhabited areas.
- One debris flow near the California town of Tecate creates a high risk for one structure that appears to be a house.
- However, the debris flows do travel south into Mexico, and two relatively small debris flows would impact the Mexican city of Tecate. Two other debris flows on the east edges of the burn area in the Campo Creek watershed also flow into Mexico, but appear to initially impact a creek to the east of the Mexican city of Tecate.
- This watershed is likely to contain numerous archaeological sites.
- Protected species within this watershed may include the Quino checkerspot butterfly.

Potential Emergency Protective Measures

- Potential emergency protective measures such as the installation of runoff barriers, placement of sandbags, dikes, ditching, jute netting, and fiber wattles should be examined to help reduce the risk of destructive debris flows. This work could be eligible under FEMA/OES PA Category B, or under NRCS. Hydroseeding is not considered an option due to the potential for introduction of invasive species.
- Emergency authorities of the Government of Mexico and the Mexican City of Tecate need to be informed of the possible risk to lives and property from debris flows from mountains across the border, caused by large storms following the Harris Fire.
- Notification to wetland permitting agencies for in stream work should occur prior to conducting emergency work for all projects within streams/water courses.

Table 1 – Possible Funding Sources

Yes	No	Funding Sources
X		FEMA/OES Public Assistance Emergency Work (Cat A & B)
	X	FEMA/OES Public Assistance Permanent Work (Cat C-G)
	X	406 Hazard Mitigation
	X	404 Hazard Mitigation
X		Natural Resource Conservation Service (NRCS)
	X	U.S. Fish & Wildlife Service
X		U.S. Army Corps of Engineers
	X	National Marine Fisheries Service (NMFS)
X		California Disaster Assistance Act
X		Federal Highways Administration (FHWA)
	X	Other funding

Appendices

Appendix A – Environmental Permitting Requirements
Appendix B – Archaeological
Appendix C – Descriptions of State and Federal Program Funding
Appendix D – Preliminary Suggested Projects

Total Pop.
101,777

Harris Post-Fire Hazard Awareness Map

FEMA DR-1731-CA
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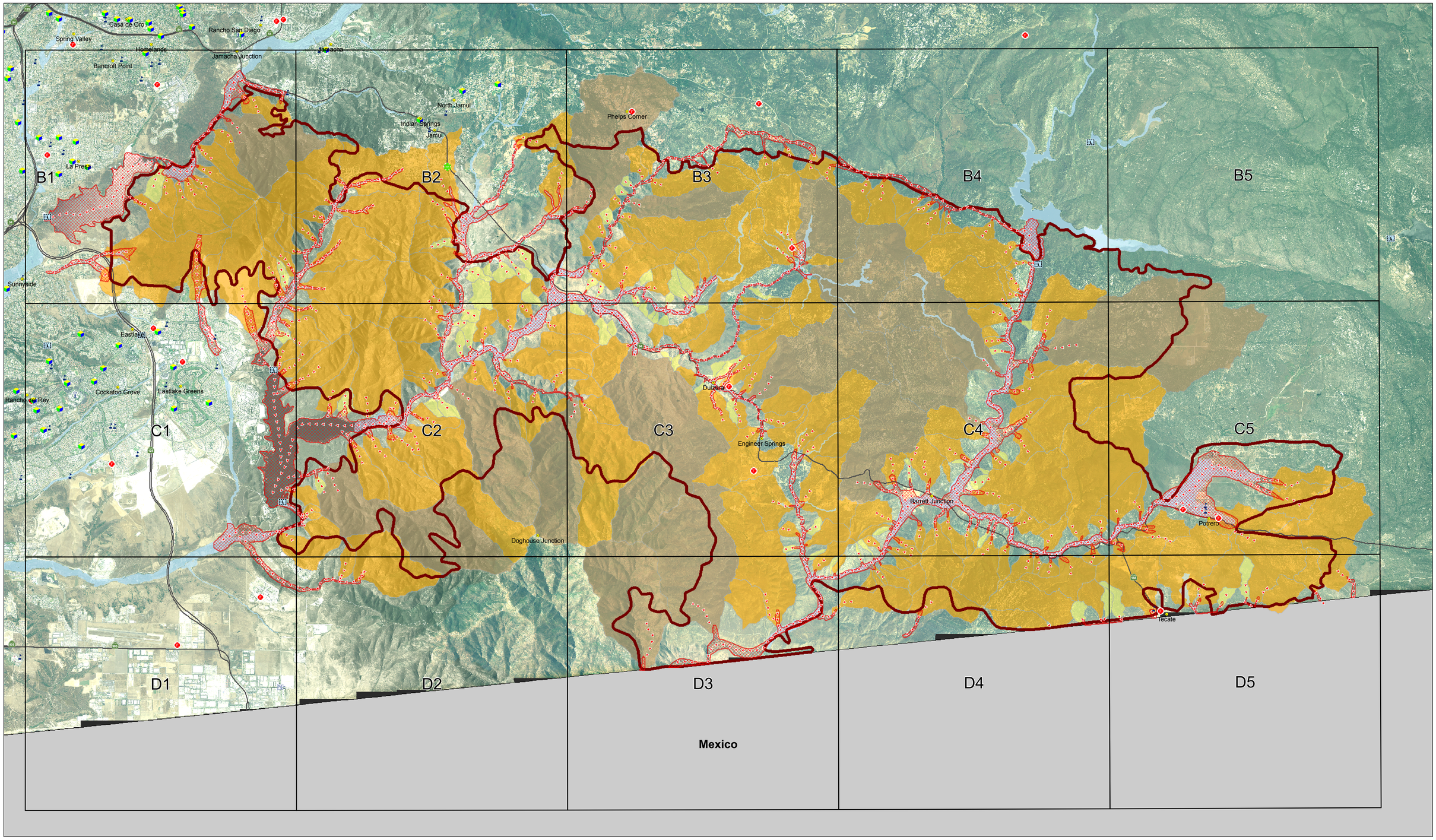
Page #
Index



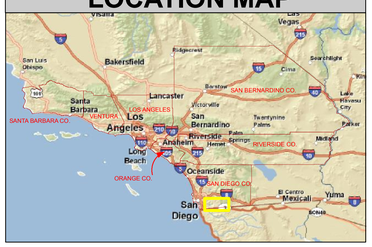
LEGEND

- Populated Places
- Daycare Facilities
- EMS
- School
- Fire Station
- Police
- Dam
- Harris Debris Flow Lines
- FEMA Flood Hazard Areas
- Fire Perimeters
- FEMA Potential Debris Flow Areas

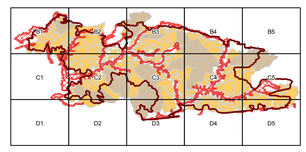
USGS Potential Debris Volume

- 0 to 1,000 cubic meters
- 1,001 to 10,000 cubic meters
- 10,001 to 100,000 cubic meters

LOCATION MAP



INDEX MAP



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CAL FIRE

MAPS FOR ADVISORY PURPOSES ONLY. NOT FOR INSURANCE RATING PURPOSES. For insurance rating purposes, please refer to the Flood Insurance Rate Map currently in effect.
Debris flow information is PRELIMINARY. Debris flow volumes calculated in response to a 10 year recurrence based on 3 hour duration storm producing 1.75 inches of rainfall.
Volumes based on a model currently being tested. Debris flow behavior is highly unpredictable and this map shows the best available information at the time of printing.
Populations estimated using 2000 Census data and are calculated for those areas only within the grid index.

Department of Homeland Security
Federal Emergency Management Agency
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Author: MASG - Colton
Version: V 1.0

N W E S

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0 0.5 1 2 3 4 5 6 Miles

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